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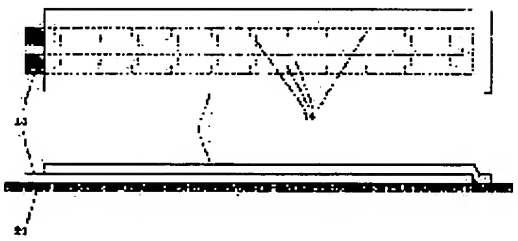
(54) SEAL

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a seal which has excellent production adaptability and is electrically detectable by providing the one surface of a film base material with electric circuits and providing the front surface of this electric circuits with adhesives.

SOLUTION: A brittle film base material 1 consists of a polyvinyl chloride brittle film and an acrylic tacky adhesive layer. The electric circuits 10 have aluminum thin-film patterns via the adhesives on the one surface on the base material sheet of polyethylene phthalate. The electric circuits have the acrylic pressure sensitive adhesive layer on the other surface. A release sheet 20 is laminated on its front surface. The electric circuits 10 are provided with notches 14. After the release sheet 20 is peeled, the adhesive of the electric circuit surface is affixed to an adhered desired to be sealed and electric circuit terminals are connected to an electrical detector. Even if this seal is attempted to be peeled, the brittle film is destroyed and the electric circuits 10 are disconnected to the notches 14 and, therefore, the abnormality is detected by the detector.



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	3/00			3/00	Ｍ
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			Ｄ２１Ｈ	5/00	

審査請求　未請求　請求項の数６　ＦＤ　（全　４　頁）

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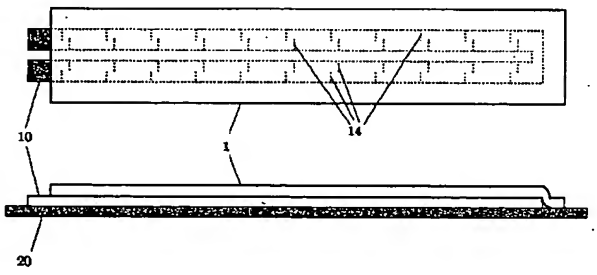
最終頁に続く

(54)【発明の名称】　封印シール

(57)【要約】
【課題】製造適性に優れた、開封を電気的に検知し易い封印シールを提供する。
【解決手段】一方の表面に電気回路を有する破壊又は変形し易いフィルム基材と、該フィルム基材の前記表面の少なくとも電気回路表面に設けられた、被着体と剥離不能に接着する接着剤とを有する封印シール。



【特許請求の範囲】
【請求項１】　一方の表面に電気回路を有する破壊又は変形し易いフィルム基材、及び、該フィルム基材の前記表面の少なくとも電気回路表面に設けられた、被着体と剥離不能に接着する接着剤とを有することを特徴とする封印シール。
【請求項２】　フィルム基材が、破壊され易くするために形成された切り込みを有するフィルム、脆質フィルム又は変形し易い延性フィルムの何れかである、請求項１に記載された封印シール。
【請求項３】　電気回路自身に、導通が確保されると共に切断され易くするための切り込みが設けられている、請求項１又は２に記載された封印シール。
【請求項４】　電気回路が印刷によって設けられてなる請求項１～３の何れかに記載された封印シール。
【請求項５】　電気回路が、金属薄膜と薄膜プラスチックフィルムとが積層されてなる構造を有する、請求項１～３の何れかに記載された封印シール。
【請求項６】　被着体と剥離不能に接着する接着剤表面に剥離シートが設けられている、請求項１～５の何れかに記載された封印シール。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は封印シールに関し、特に、封印後の開封を電気的に検知するに適した封印シールに関する。
【０００２】
【従来の技術】近年のコンピュータ技術の発展は目覚ましく、その応用は広がる一方であり、例えばパチンコ台の出玉制御にも応用されている。このようなゲーム装置においては、客寄せのために或いは客が違法に、使用されているＲＯＭ等を入れ換えるという問題が発生する。そこで、かかる改造を防止するために、ＲＯＭなどの主要な部品や、それらの電子部品を実装した基板を収納するケースに封印をすることが行われ、最近においては、そのための封印シールとして、一度貼着されたものを剥離すると容易に電気的に検知されるような、導電部材を組み込んだものも提案されている（特開平８－２２１６７６号公報）。
【０００３】
【発明が解決しようとする課題】しかしながら、上記の封印シールには、強接着性の接着剤と弱接着性の接着剤が組み合わせて用いられているので、その製造方法は煩雑であり、コスト高になり易いという欠点があった。そこで、本発明者らは、上記の欠点を解決すべく鋭意検討した結果、破壊及び／又は変形し易いフィルム基材表面に、金属薄膜からなる電気回路を設けることにより、接着力の異なる２種以上の接着剤を塗り分ける必要がないので極めて簡便に製造することのできる、電気的に開封を検知し易い封印シールとすることができることを見出し、本発明に到達した。従って本発明の目的は、製造適性に優れた、電気的に検知し易い封印シールを提供することにある。
【０００４】
【課題を解決するための手段】本発明の上記の目的は、一方の表面に電気回路を有する破壊又は変形し易いフィルム基材、及び、該フィルム基材の前記表面の少なくとも電気回路表面に設けられた、被着体と剥離不能に接着する接着剤とを有することを特徴とする封印シールによって達成された。
【０００５】
【発明の実施の形態】本発明におけるフィルム基材は、公知のプラスチックフィルムの中から適宜選択することができる。これらのフィルム基材として、脆質でも延性でもないフィルムを使用する場合には、貼着後の剥離時に、容易に破壊又は破断されるようにするために、予め１以上の切り込みを持たせることが必要である。この切り込みの数や形状は、用いるフィルム基材の材質、厚み、封印シールの形状等によって適宜設計すれば良いが、切り込みの深さは、フィルム基材の厚み以上とすることが好ましい。尚、ここで「以上」とは、後記する如く、フィルム基材に積層される電気回路や、接着剤層をも考慮した記述である。
【０００６】脆質フィルムとしては、例えば、塩化ビニル樹脂、アクリル樹脂、アセテート樹脂等のフィルムを挙げることができるが、本発明においては、特に耐水性の観点から、塩化ビニル樹脂及びアクリル樹脂のフィルムが好ましい。又、延性フィルムとしては、例えばポリエチレン樹脂、ポリプロピレン樹脂、軟質塩化ビニル樹脂、塩化ビニリデン樹脂及びブタジエンゴムのフィルム等を挙げることができる。これらのフィルムは、取り扱い性に支障ない限り薄くて弱い方が好ましい。
【０００７】電気回路は、前記フィルム基材の一方の表面に電導性インクをスクリーン印刷等の手段を用いて印刷することにより、或いはパターン状に金属を蒸着させることにより、フィルム基材表面に直接設けることができるが、パターン状の金属薄膜を貼着しても良い。パターン状の金属薄膜を貼着する場合には、その取り扱い性を担保するために、先ず、薄いプラスチックシートに接着剤を介して金属薄膜を貼着した積層シートを製造し、これを所望のパターンにカットする。この場合、上記プラスチックシートの裏面に、公知の如く、接着剤層を設けた剥離シートの接着剤層面を貼着しておいても良い。
【０００８】何れにしても、実用上は、被着体に接着させる封印シートの接着剤面には剥離シートを設けておくことが好ましい。従って、フィルム基材の一方の表面に直接電気回路を設けたり、パターン状の金属薄膜を接着剤を介して貼着することにより電気回路を設けた場合には、該電気回路が設けられたフィルム基材の全表面に接着剤層を介して剥離シートを設けることが好ましい。

【０００９】本発明の封印シールを製造する際に用いる接着剤は、容易に剥離せず、無理に剥離させようとすると、フィルム基材及び電気回路が破損する程度の接着強度を有するものである限り、通常の接着剤であっても、その他の感圧接着剤或いは感熱接着剤であっても良く、特に限定されることはない。尚、剥離シートとしては、ポリエチレンラミネート紙やプラスチックフィルムにシリコーン樹脂等の剥離剤を塗布した公知のものが使用できる。

【００１０】

【実施例】以下、本発明を実施例に基づいて更に詳述するが、本発明はこれによって限定されるものではない。図１は、本発明の封印シールの平面概略図及びそれに対応する側面概略図である。図中、符号１は脆質フィルム基材、１０は電気回路、２０は剥離シートである。図２は、図１の封印シール断面構成図である。図中符号１は、厚さ５０μｍの塩化ビニル製脆質フィルム２と厚さ２５μｍのアクリル系粘着剤層３とからなる脆質フィルム基材、１０は、厚さ２５μｍのポリエチレンテレフタレートシートである薄手の基材シート１２上の一方の面に、接着剤（図示せず）を介して９μｍのアルミ薄膜１１を有し、他方の面に被着体に接着させる厚さ２５μｍのアクリル系感圧接着剤層１３を有する電気回路、２０は剥離シートである。電気回路１０には、回路がわずかな力によって切断されるように切り込み１４が設けられている。

【００１１】この封印シールを使用する場合には、剥離シート２０を剥がした後、電気回路表面の接着剤を封印したい被着体に貼着し、次いで、電気回路端子を、電気的検知器に接続すれば良い。一度貼着した後に、この封印シールを剥がそうとしても、脆質フィルム２の強度が弱いので、このフィルムが破壊され、及び／又は、電気回路が切り込み１４から切断れるので、検知器に異常を検知させることなく剥がすことは不可能である。

【００１２】図３は、脆質フィルムではなく、ポリエチレンテレフタレートフィルムのような通常のフィルムをフィルム基材として用いた場合の平面図である。フィルム基材として厚さ３８μｍのポリエチレンテレフタレートフィルムを用いたが、この場合には、電気回路に切り込み１４を設けるのみならず、フィルム基材にもこのフィルム基材の厚み以上の切り込み４を設ける。フィルム基材の切り込みが電気回路にまで及ぶ場合には、更に電気回路に他の切り込みを設けなくても良い。

【００１３】フィルム基材の切れ目は、剥離シートを剥がす場合等の取り扱い性を容易にする上からは、図４に示す如く、切り込みがフィルム基材の端部にまで達しないようにすることが好ましい。この場合には、貼着された封印シールを剥がす時にフィルム基材の破壊が速やかに起こらない恐れがあるので、図５に示す如く、フィルム基材端部に達する小さな切り込み４を更に設けることが好ましい。

【００１４】このようにすることにより、剥離シートを剥がす場合に誤ってフィルム基材を破壊し、更に電気回路を切断するという事故を防ぐことができる上、一度貼着した封印シールを剥がそうとした場合には、フィルム基材端の小さな切り込みがきっかけとなり、容易にフィルム基材が破壊される。また、フィルム基材を通して回路が見えることを防止するために、不透明なフィルム基材を用いたり、フィルム基材の表面に不透明な塗料を塗布しても良い。

【００１５】図６及び図７は本発明の他の実施例である。この実施例においては、厚さ５０μｍの塩化ビニル製脆質フィルム１の一方の面に、スクリーン印刷により銀カーボンペーストからなる導電インキを印刷（厚さ８μｍ）して電気回路１０を設け、該電気回路１０が設けられた表面に厚さ２５μｍのアクリル系感圧接着剤層１３を設け、その表面に剥離シート２０が積層されている。

【００１６】この封印シールを被着体に貼着した後剥がそうとすると、脆質フィルム１も電気回路１５も共に強度が弱いので、電気回路１５が脆質フィルム１とともに破壊される。また、別の実施例として、上記の脆質フィルムの代わりに厚さ７０μｍのポリエチレンフィルムを延性フィルムに用いた。この場合には、封印シールを剥がそうとすると延性フィルムは延伸するが、電気回路は延性フィルムの延伸に追随できないため回路が破壊される。

【００１７】

【発明の効果】本発明の封印シールは接着強度の異なる複数の接着剤を塗り分けるという必要がないので、その製造は従来技術に基づいて容易に行うことができる。

【図面の簡単な説明】

【図１】本発明の封印シールのうち、脆質フィルムを使用した例を示す平面概念図及び対応する側面概念図である。

【図２】図１の封印シールの断面概念図である。

【図３】本発明の封印シールのうち、切り込みの入ったフィルムを使用した例を示す平面概念図である。

【図４】図３の切り込み端部の部分拡大図である。

【図５】図３の切り込み端部の、他の例を示す部分拡大図である。

【図６】本発明の封印シールの他の実施例を表す平面図である。

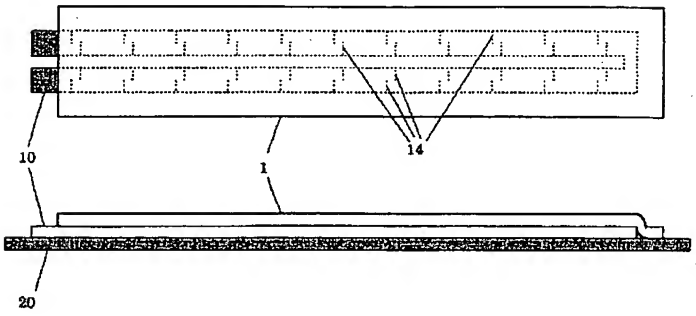
【図７】図６の実施例の封印シールの断面概念図である。

【符号の説明】

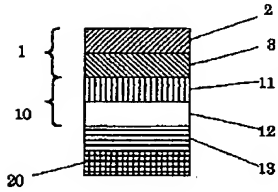
１　フィルム基材
２　フィルム
３　粘着剤層
４　フィルム基材に設けられた切り込み

５　切り込みを有するフィルム基材
１０　電気回路
１１　アルミ薄層
１２　薄手の基材シート
１３　接着剤層
１４　アルミ薄層に設けられた切り込み
２０　剥離シート

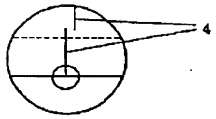
【図１】



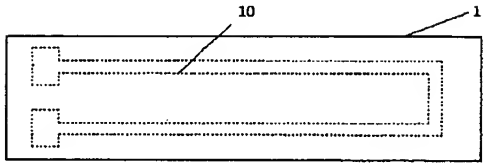
【図２】



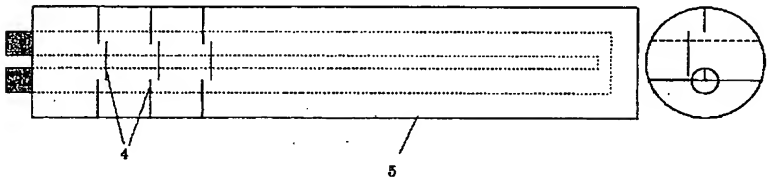
【図４】



【図６】

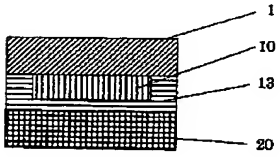


【図３】



【図５】

【図７】



フロントページの続き

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JAPANESE [JP,11-007245,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS

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CLAIMS

[Claim(s)]
[Claim 1] The film base material which has an electrical circuit on the surface of one side and which destroy or is easy to deform, and the seal seal characterized by having the adherend of said front face of this film base material prepared in the electrical circuit front face at least, and the adhesives pasted up on exfoliation impossible.
[Claim 2] The seal seal which it is in any of the film which has slitting formed in order that a film base material might carry out that it is easy to be destroyed, a **** film, or the ductility film which is easy to deform and which was indicated by claim 1.
[Claim 3] The seal seal with which slitting for carrying out that it is easy to be cut while a flow is secured is prepared in the electrical circuit itself and which was indicated by claim 1 or 2.
[Claim 4] The seal seal indicated by any of claims 1-3 to which it comes to prepare an electrical circuit by printing they are.
[Claim 5] The seal seal with which an electrical circuit has the structure of coming to carry out the laminating of a metal thin film and the thin film plastic film and which was indicated by any of claims 1-3 they are.
[Claim 6] The seal seal with which the exfoliation sheet is prepared in the adhesives front face pasted up on adherend and exfoliation impossible and which was indicated by any of claims 1-5 they are.

[Translation done.]

JAPANESE [JP,11-007245,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] Especially this invention relates to the seal seal suitable for detecting opening after a seal electrically about a seal seal.
[0002]
[Description of the Prior Art] Development of computer technology in recent years is remarkable, and the application is applied [which is spreading steadily] also to reward-balls control of a pachinko base. In such game equipment, the problem that a visitor replaces illegally ROM currently used since it is an attraction occurs. Then, sealing in the case which contains the substrate which mounted components with main ROM etc. and those electronic parts, in order to prevent this modification is performed, and in recently, if what was stuck once is exfoliated as a seal seal for it, the thing incorporating a conductive member which is detected electrically easily is also proposed (JP,8-221676,A).
[0003]
[Problem(s) to be Solved by the Invention] However, since the adhesives of a strong adhesive property and the adhesives of a weak adhesive property combined and were used for the above-mentioned seal seal, the manufacture approach had the fault of it having been complicated and being easy to become cost high. Then, by establishing the electrical circuit which consists of a metal thin film in the film base material front face which was examined wholeheartedly that the above-mentioned fault should be solved and which result and destroy and/or is easy to deform, since this invention persons did not need to distinguish by different color two or more sorts of adhesives with which adhesive strength differs with, they reached [that it can consider as the seal seal which can be manufactured very simple and which is easy to detect opening electrically, and] a header and this invention. Therefore, the object of this invention is to offer the seal seal excellent in manufacture fitness which is easy to detect electrically.
[0004]
[Means for Solving the Problem] The above-mentioned object of this invention was attained by the seal seal characterized by having the film base material which has an electrical circuit on the surface of one side, and which destroy or is easy to deform, and the adherend of said front face of this film base material prepared in the electrical circuit front face at least and the adhesives pasted up on exfoliation impossible.
[0005]
[Embodiment of the Invention] The film base material in this invention can be suitably chosen from well-known plastic films. In using the film which is not **** or ductility, either as these film base materials, in order to make it easily destroyed or fractured at the time of the exfoliation after attachment, it is required to give one or more slitting beforehand. Although what is necessary is for the configuration of the construction material of the film base material to be used, thickness, and a seal seal etc. just to design the number and configuration of this slitting suitably, as for the depth of slitting, it is desirable to carry out to more than the thickness of a film base

material. In addition, as a postscript is carried out to the "above" here, they are the electrical circuit by which a laminating is carried out to a film base material, and description also in consideration of an adhesives layer.
[0006] As a **** film, although films, such as vinyl chloride resin, acrylic resin, and acetate resin, can be mentioned for example, in this invention, the film of a waterproof viewpoint to vinyl chloride resin and acrylic resin is especially desirable. Moreover, as a ductility film, polyethylene resin, polypropylene resin, soft polyvinylchloride resin, vinylidene chloride resin, the film of butadiene rubber, etc. can be mentioned, for example. As long as it is convenient to handling nature, the thin and weaker one of these films is desirable.
[0007] Although an electrical circuit can form means, such as screen-stencil, for conductive ink in a film base material front face directly on one front face of said film base material by [which use and print] depending especially or making a metal vapor-deposit in the shape of a pattern, it may stick a pattern-like metal thin film. In sticking a pattern-like metal thin film, in order to collateralize the handling nature, the laminating sheet which stuck the metal thin film on the thin plastic sheet through adhesives first is manufactured, and this is cut into a desired pattern. In this case, the adhesives stratification plane of an exfoliation sheet which prepared the adhesives layer may be stuck on the rear face of the above-mentioned plastic sheet so that it may be well-known.
[0008] Anyway, it is desirable to prepare an exfoliation sheet in the adhesive coated surface of the seal sheet pasted up on adherend practically. Therefore, when an electrical circuit is prepared by establishing a direct electrical circuit in one front face of a film base material, or sticking a pattern-like metal thin film on it through adhesives, it is desirable to prepare an exfoliation sheet in all the front faces of a film base material in which this electrical circuit was established through an adhesives layer.
[0009] If it is not going to exfoliate easily but you are going to make it exfoliate by force, as long as it has the bond strength which is extent which a film base material and an electrical circuit damage, the adhesives used in case the seal seal of this invention is manufactured may be the usual adhesives, or may be other pressure sensitive adhesives or sensible-heat adhesives, and are not limited especially. In addition, as an exfoliation sheet, the well-known thing which applied removers, such as silicone resin, to the polyethylene laminated paper or the plastic film can be used.
[0010]
[Example] Hereafter, this invention is not limited by this although this invention is further explained in full detail based on an example. Drawing 1 is the flat-surface schematic diagram of the seal seal of this invention, and a side-face schematic diagram corresponding to it. The signs 1 of a **** film base material and 10 are [an electrical circuit and 20] exfoliation sheets among drawing. Drawing 2 is the seal seal cross-section block diagram of drawing 1 . The **** film base material which consists of a **** film 2 made from a vinyl chloride with a thickness of 50 micrometers and an acrylic binder layer 3 with a thickness of 25 micrometers, and 10 the sign 1 in drawing To one field on the thin base material sheet 12 with a thickness of 25 micrometers which is a polyethylene terephthalate sheet The electrical circuit which has the 9-micrometer aluminum thin film 11 through adhesives (not shown), and has the acrylic pressure sensitive adhesive layer 13 with a thickness of 25 micrometers which adherend is made to paste up on the field of another side, and 20 are exfoliation sheets. It cuts in an electrical circuit 10 deeply so that a circuit may be cut by few force, and 14 is prepared in it.
[0011] What is necessary is to stick on adherend to seal the adhesives on the front face of an electrical circuit, and just to connect an electrical circuit terminal subsequently to an electric detector, after removing the exfoliation sheet 20 in using this seal seal. Since the reinforcement of the **** film 2 is weak even if it is going to remove this seal seal once sticking, this film is destroyed, and/or an electrical circuit cuts deeply, it is that of 14 to cutting ****, and removing without making a detector detect abnormalities is impossible.
[0012] Drawing 3 is a top view at the time of using a usual film like the polyethylene terephthalate film instead of a **** film as a film base material. Although the polyethylene terephthalate film with a thickness of 38 micrometers was used as a film base material, in this case, it cuts deeply to an electrical circuit and it not only

prepares 14, but forms the slitting 4 more than the thickness of this film base material in a film base material. When slitting of a film base material reaches even an electrical circuit, it is not necessary to prepare other slitting in an electrical circuit further.

[0013] As shown in drawing 4 from from [when making easy handling nature in the case of removing an exfoliation sheet etc.], as for the break of a film base material, it is desirable to make it slitting not arrive at even the edge of a film base material. In this case, since there is a possibility that destruction of a film base material may not take place promptly when removing the stuck seal seal, as shown in drawing 5 , it is desirable to form further the small slitting 4 which arrives at a film base material edge.

[0014] When removing an exfoliation sheet by doing in this way, a film base material is destroyed accidentally, when the accident in which an electrical circuit is disconnected further can be prevented, slitting with a film base material edge small when it is going to remove the seal seal stuck once serves as a cause, and a film base material is destroyed easily. Moreover, in order to prevent that a circuit can be seen through a film base material, an opaque film base material may be used or an opaque coating may be applied to the front face of a film base material.

[0015] Drawing 6 and drawing 7 are other examples of this invention. In this example, the acrylic pressure sensitive adhesive layer 13 with a thickness of 25 micrometers is formed in the front face on which the electric conduction ink which consists of silver carbon paste by screen-stencil was printed to one field of the **** film 1 made from a vinyl chloride with a thickness of 50 micrometers (8 micrometers in thickness), the electrical circuit 10 was established in it, and this electrical circuit 10 was established in it, and the laminating of the exfoliation sheet 20 is carried out to that front face.

[0016] If it is going to remove after sticking this seal seal on adherend, since both the **** film 1 and the electrical circuit 15 have weak reinforcement, an electrical circuit 15 will be destroyed with the **** film 1. Moreover, the polyethylene film with a thickness of 70 micrometers was used for the ductility film instead of the above-mentioned **** film as another example. In this case, if it is going to remove a seal seal, a ductility film will be extended, but since an electrical circuit cannot follow in footsteps of the drawing of a ductility film, a circuit is destroyed.

[0017]

[Effect of the Invention] Since it is not necessary to say that the seal seal of this invention distinguishes by different color two or more adhesives with which bond strength differs with, the manufacture can be easily performed based on the conventional technique.

[Translation done.]

JAPANESE [JP,11-007245,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the flat-surface conceptual diagram and the corresponding side-face conceptual diagram showing the example which used the **** film among the seal seals of this invention.
[Drawing 2] It is the cross-section conceptual diagram of the seal seal of drawing 1 .
[Drawing 3] It is the flat-surface conceptual diagram showing the example which used the film into which slitting went among the seal seals of this invention.
[Drawing 4] It is the elements on larger scale of the slitting edge of drawing 3 .
[Drawing 5] It is the elements on larger scale showing other examples of the slitting edge of drawing 3 .
[Drawing 6] It is a top view showing other examples of the seal seal of this invention.
[Drawing 7] It is the cross-section conceptual diagram of the seal seal of the example of drawing 6 .
[Description of Notations]
1 Film Base Material
2 Film
3 Binder Layer
4 Slitting Prepared in Film Base Material
5 Film Base Material Which Has Slitting
10 Electrical Circuit
11 Aluminum Thin Layer
12 Thin Base Material Sheet
13 Adhesives Layer
14 Slitting Prepared in Aluminum Thin Layer
20 Exfoliation Sheet

[Translation done.]